

AP Biology Topic 2.5 – Tonicity & Osmoregulation Video Notes

1. What is osmosis? How are large quantities of water transported?
2. What is osmolarity?
3. Explain what solutes and solvents are. Explain what a solution is.
4. What is tonicity?
5. Explain what hypertonic, isotonic, and hypotonic solutions are.
6. How are water and solute concentrations inversely related?
7. Why would water diffuse out of a hypotonic environment to a hypertonic environment?
8. In which direction do solutes diffuse?
9. Explain how an isotonic environment looks.
10. Is the environment hypertonic, isotonic, or hypotonic in the picture at 3:11s in the video? Explain your answer.
11. What does osmoregulation do in plant cells?
12. What is environmental hypertonicity and what does it lead to in plant cells?
13. What does isotonic solution lead to in plants?
14. What is environmental hypotonicity and what does it lead to in plant cells?

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15. Why is osmotic pressure high outside of a plant cell?
16. What happens when plants are in a hypotonic environment?
17. Explain what turgor pressure is and what causes it.
18. What does osmoregulation do in animal cells?
19. Explain hypertonicity in animal cells. Explain isotonic solution in animal cells.
- Explain hypotonicity in animal cells.

Practice:

A freshwater paramecium is a single celled organism.

- The environment is hypotonic to the paramecium
 - o More cellular solute and less cellular water
- Water enters the cell via osmosis
- The paramecium is in danger of cell lysis
 - o Excess water collects in the contractile vacuole and is pumped out

What would happen if the freshwater Paramecium was placed in salt water?

Lesson Skills Practice:

A common laboratory investigation aimed at understanding how molecular size affects movement through a membrane involves putting a solution of starch and glucose into a dialysis bag and suspending the bag in a beaker of water.

- Which direction does water flow in the diagram? Explain why.
- Which direction does glucose flow in the diagram? Explain why.
- Which direction does starch flow in the diagram? Explain why.
- Why is graph A the answer?